
Pikedaw Calamine Caverns

[SD 875 640]

Highlights

Pikedaw Calamine Caverns is the larger of two accessible caves in the limestone of the Malham area with secondary minerals of base metals deposited on the cave walls.

Introduction

Pikedaw Calamine Caverns lie beneath the limestone plateau west of Malham Cove (Figure 2.33). An isolated segment of relict phreatic cave contains just over 1000 m of mapped passage, now only accessible via a 25 m mine shaft. The mining activity was reviewed by Simpson (1967), and the cave passages are described by Brook *et al.* (1991).

Description

The mine shaft from the surface enters through the roof of a chamber from which three passages radiate. A phreatic passage up to 10 m wide and 5m high extends over 200 m west and then south to end in a choke. South and east of the entrance shaft, large and small phreatic tunnels radiate and each extend about 100 m to chokes; there is also a small stream passage which can be followed to an upstream sump. All the large relict passages contain thick sand and mud deposits, some of which have been removed by miners. In some chambers there are thin green and blue wall coatings of secondary minerals of zinc, copper and lead. The abandoned tunnels are largely horizontal and lie about 250 m above the resurgence of Malham Cove Rising; the destination of the modern, underfit stream is unknown.

Interpretation

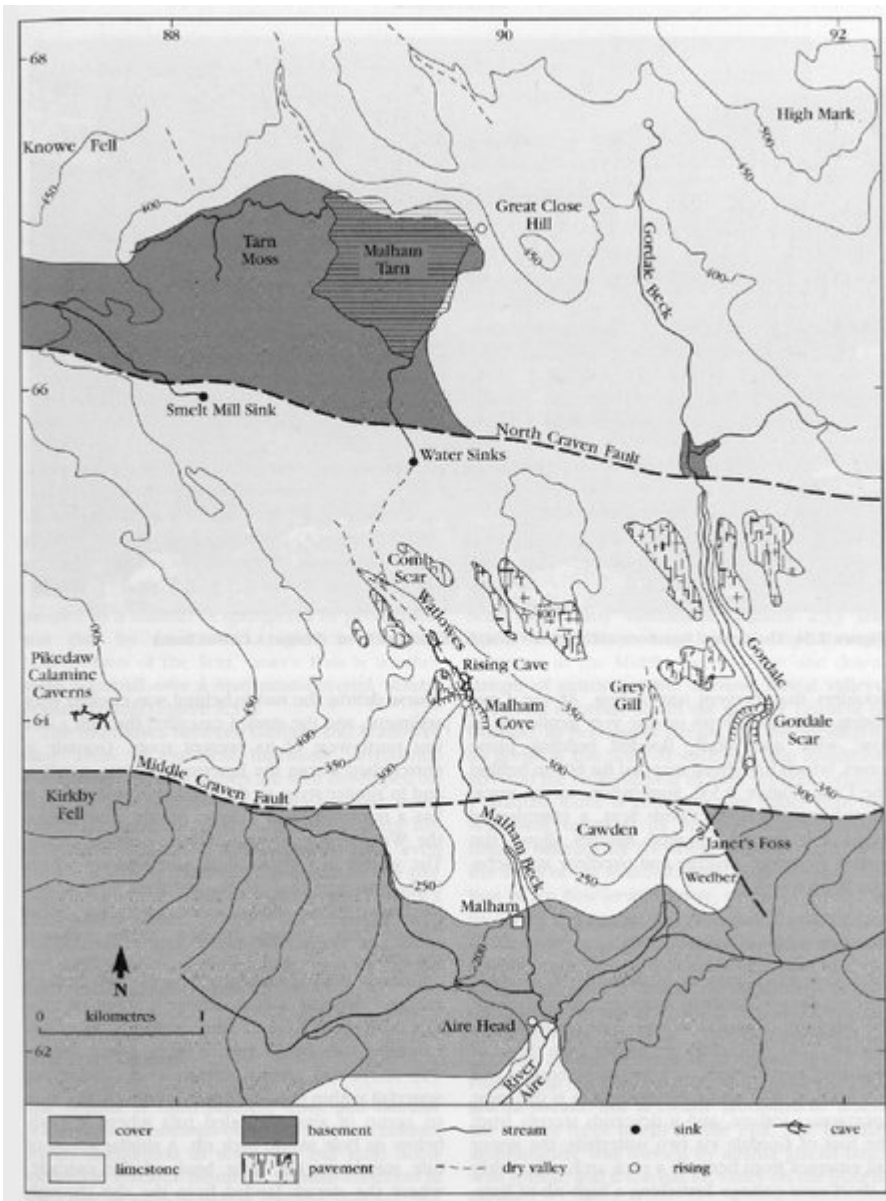
Pikedaw Calamine Caverns are the only abandoned, high-level, phreatic cave passages of any significant length known in the Malham area. Their great elevation above the present resurgence indicates that they are of considerable age; they long predate the evolution of Malham Cove and the other major features of the local karst. The phreatic tunnels appear to be fragments of major relict conduits, but there is no indication of where the sinks and resurgence were located; they were probably close to contemporary boundaries of the cover rocks which have since been stripped away.

Within the Yorkshire Pennines, the hydrated carbonates of zinc, copper and lead are only known in the Calamine Caverns and in the Grollit, a small cave 500 m to the north-east from which miners have also removed the mineralized sediment. The secondary mineralization may have been due to the redistribution by solution of metal ions from primary sulphides in hydrothermal veins, during the phreatic phase of the caves' history (Raistrick, 1938, 1954); this has implications for the potential generation of sulphuric acid, which could have played a significant role in the processes of karstic solution.

Conclusion

Pikedaw Calamine Caverns are a fragment of an ancient phreatic system which must relate to a former drainage and topography. They are distinguished by the coatings of secondary base metal carbonates on the walls of the ancient phreatic caves.

[References](#)



(Figure 2.33) Geological map of the area around Malham Cove and Gordale Scar. The limestone at Aire Head is a thin basinal facies, distinct from the reef and shelf limestones north of Malham village. Cover rocks are Bowland Shales. Basement rocks are Silurian siltstones. There are many minor faults, mostly orientated NW–SE between the North and Middle Craven Faults. Only the main areas of well formed limestone pavement are marked.